We Claim

1. A method of generating a multifidelity model of a system, comprising the steps of:

(a) obtaining training data from a high fidelity model of the system;

(b) providing a low fidelity model of the system, the low fidelity model having adjustable weightings for respective input parameters to the low fidelity model;

(c) providing a compensation model to compensate for discrepancies between the high and low fidelity models;

(d) adjusting the compensation model and the weightings to optimise the correlation of the low fidelity model, when compensated by the compensation model, with said training data; and

(e) generating a multifidelity model of the system based on the adjusted low fidelity model when compensated by the adjusted compensation model.

2. A method of generating a multifidelity model according to claim 1, wherein the compensation model is a kriging model.

3. A method of generating a multifidelity model according to claim 1, wherein the compensation model is a neural network.

4. A method of generating a multifidelity model according to claim 1, wherein the system comprises a gas turbine engine or a part of a gas turbine engine.

5. A method of generating a multifidelity model according to claim 4, wherein the part of the gas turbine engine comprises a bearing housing.

6. A method of generating a nultifidelity model according to claim 1, wherein the model is selected from the group comprising stress, strain, fluid flow and thermal.

7. Computer readable program code for implementing the method of claim 1.

8. Computer readable media carrying program code for implementing the method of claim 1.

9. A computer system operatively configured to implement the

method of claim 1.

10. Computer readable program code for implementing a multifidelity model generated using the method of claim 1.

11. A method of generating a multifidelity model of a system, comprising the steps of:

(a) obtaining training data from a high fidelity model of the system;

(b) providing a low fidelity model of the system;

(c) providing a kriging model to compensate for discrepancies between the high and low fidelity models;

(d) adjusting the kriging model to maximise the likelihood of said training data when the low fidelity model, compensated by the kriging model, is used to model the system; and

(e) generating a multifidelity model of the system based on the low fidelity model when compensated by the adjusted kriging model.